

REMARKS

This Amendment is in response to the Office Action dated March 23, 2005. In that Office Action, Claims 41-50 and 57-58 were objected to because the property of biaxial toughness was claimed in Claim 41, but the Examiner noted it was unclear how biaxial toughness is achieved. Further, Claims 41-50 and 57-58 were rejected under §103(a) as unpatentable over *Maxfield et al.* (WO 93/04118) in view of *Willbrandt et al.* (United States Patent No. 5,769,266) and *Aoki et al.* (United States Patent No. 4,010,618).

As amended, this application is believed in condition for allowance. Claim 41 has been amended to recite that the volume of the tumbler is from about 1.5 to about 4 times the volume of an injection-molded parison from which the tumbler is made:

1. An injection blow-molded tumbler formed from a nanocomposite comprising a matrix polymer and a nanoparticle filler comprising:
 - (a) a base forming the bottom of said tumbler defining an outer edge thereof;
 - (b) a sidewall integrally formed with said base extending upwardly from the outer edge thereof defining about its upper extremity a fortified rim;
 - (c) wherein said fortified rim has a thickness greater than the adjacent portion of said sidewall; and
 - (d) wherein the volume of the injection blow-molded tumbler is from about 1.5 to about 4 times the volume of an injection-molded parison from which it was prepared.

The amendments to Claim 1 make clear that the invention is directed to a blow-molded article (which has biaxial toughness). Support for the added language is found in the specification as filed, notably on page 7, lines 8-10.

It is also noted that the amendments to Claim 41 track the language of the grant-parent case, now United States Patent No. 6,866,905. Claim 41 is believed allowable for at least the

reasons advanced with respect to the '905 patent over substantially similar art and for the further reason that it is unexpected that nanocomposites could be advantageously used in connection with blow-molding a tumbler from a molten parison.

In this regard, relatively high melt strength of a material is ordinarily required for blow-molding inasmuch as the parison must be expanded into the desired shape without bursting or otherwise fracturing. It is well known in the polymer art that fillers ordinarily degrade melt strength of a polymeric material. It is therefore unexpected and indeed surprising that nanocomposites are readily formed into tumblers by blow-molding. In this regard it is noted that nanocomposites have been observed by Applicant to exhibit increased melt strength over polymeric compositions without fillers and that those nanocomposites are readily blow-molded into shaped articles.

The art does not suggest the invention of Claim 41 for the further reasons discussed below.

The primary reference, *Maxfield*, describes a process of forming polymer nanocomposites. *Maxfield* describes a variety of shaping processes and potential articles made from nanocomposite polymers. However, the reference does not remotely suggest or teach injection blow-molding of tumblers. In this regard, the Examiner's attention is directed to *Maxfield*, p. 37-38:

The nanocomposite compositions according to the invention are thermoplastic and, in some cases, vulcanizable materials from which molded articles of manufacture having valuable properties can be produced
35 by conventional shaping processes, such as melt spinning, casting, vacuum molding, sheet molding, injection molding and extruding. Examples of such

molded articles are components for technical equipment, apparatus castings, household equipment, sports equipment, bottles, containers, components for the electrical and electronics industries, car components,
5 circuits, fibers, semi-finished products which can be shaped by machining and the like. The use of the materials for coating articles by means of powder coating processes is also possible, as is their use as hot-melt adhesives. The molding compositions according
10 to the invention are outstandingly suitable for specific applications of all types since their spectrum of properties can be modified in the desired direction in manifold ways. Such molded products of this

As clearly seen in *Maxfield*, the invention describes possible shaping processes such as melt spinning, casting, vacuum molding, sheet molding, injection-molding and extruding. However, *injection blow-molding is not mentioned or suggested.*

Even though *Maxfield* lists potential articles that can be manufactured from nanocomposite materials such as technical equipment, apparatus castings, household equipment, sports equipment, bottles, containers, components for the electrical and electronic industries, car components, circuits, fibers, and coatings, blow-molded cups formed by expanding a parison are not remotely contemplated by the reference. It should also be noted that *Maxfield* specifically states that the nanocomposites of the invention are “suitable for the production of sheets and panels... [and] especially useful for fabrication of extruded films,” *Maxfield*, p. 38, ll. 21-23, p.39, ll. 3-4. Examiner’s attention is also directed to *Maxfield* examples, which are all referring to films (Examples 1-9, p.41-54). Accordingly, absolutely no indication exists in *Maxfield* that nanocomposite materials can be successfully injection blow-molded into tumblers.

Turning to United States Patent No. 5,769,266 to *Willbrandt*, it should be noted that it relates primarily to *injection- molded* cups, as opposed to *injection blow-molded* tumblers described by the present invention. Injection-molded cups are structurally distinct from injection *blow-molded* cups. Injection-molded cups have uniaxial orientation, while injection

blow-molded cups have biaxial orientation. In other words, injection *blow-molded* cups are created by stretching of a parison to a specific volume, thereby creating biaxial orientation and imparting toughness to the article. *Willbrandt* does mention injection blow-molding but only in passing, Col 5, lines 29:

The cup 10 can be made by any suitable method known to those skilled in the art, such as injection molding, blow molding, vacuum forming, stretch molding, or thermal molding. The preferred method uses injection molding which is well known to those skilled in the art.

It is clearly seen from *Willbrandt* that injection-molding, *not* injection *blow-molding* is the preferred method. In fact, *Willbrandt* teaches away from using injection blow-molding methods while forming cups, since it provides no suggestion or indication as to tumbler/parison volumetric relationship, which relationship occurs in injection *blow-molding* processes.

As to United States Patent No. 4,101,618 to *Aoki*, it is clearly indicated that the '618 patent refers only to hollow articles having openings at both ends. As such, *Aoki* is believed non-analogous art since it specifically excludes cups and in any event there is no mention of the fact that nanocomposites can be blow-molded.

Indeed, there is no motivation whatsoever to combine *Aoki* or *Willbrandt* with *Maxfield*. Accordingly, Claim 41 and its dependent claims are believed allowable. With respect to Claim 58 (which is similar in scope to claims issued in the parent case, now United States Patent No. 6,627,278) there appears to be no disclosure in *Maxfield* or any other reference of hydrolysis-stabilized polycarbonate for use in an injection blow-molded cup. Suitable stabilizers are suitably selected from organic acids as seen in the application as filed, p. 53.

New Claims 59-68 have been added which depend (directly or indirectly) from Claim 41. Support for Claims 59 and 60 appears on page 76 of the application as filed, lines 4-5. Support for Claims 61-68 appears beginning on page 60, line 23 of the application as filed and continues through page 62, line 19.

This *Amendment* is being filed with a *Petition* and fee for a one-month *Extension of Time*. If additional extension or fees are necessary, please consider this a *Petition* therefor and charge any fees to Deposit Account No. 50-0935.

If fees for additional claims are due, please charge our Deposit Account No. 50-0935.

Respectfully submitted,



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